

Nassau County, New York

Multi-Jurisdictional Natural Hazard Mitigation Plan

DRAFT



under contract with:



Nassau County
One West Street
Mineola, NY 11501

prepared for:



Nassau County
Office of Emergency Management
100 Carman Avenue
East Meadow, New York 11554

Revised
July 2006

prepared by:

URS

Multi-Jurisdictional Natural Hazard Mitigation Plan Nassau County, New York

- REVISED DRAFT -

Prepared for



Nassau County Office of Emergency Management
100 Carman Avenue
East Meadow, New York 11554

Prepared by



201 Willowbrook Boulevard, Box 290
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Under contract with



Nassau County
One West Street
Mineola, New York 11501

June-July 2006

As per comments received from the New York State Emergency Management Office (NYSEMO) on July 24, 2006, the Draft Plan (June 2006) has been revised to provide additional details regarding Multi-Jurisdictional Planning Participation and Documentation of the Planning Process. NYSEMO approval of the Draft is required before the document can be routed to FEMA for their review and approval. This release contains, in markup version, only those plan sections that have been modified from the June 2006 release (specifically: "1-NassauDraft-CoverThruHazID.pdf" (revised to incorporate NYSEMO comments), and the new Appendix B (added to incorporate NYSEMO comments)).

SUMMARY OF MODIFICATIONS FROM JUNE 2006 RELEASE

1. List of participants has been corrected as follows:

<i>This applies to pages vi, 8 and 9 of the June 2006 Draft</i>			
ENTITY (AS IN FIRST DRAFT)	LISTED AS (IN FIRST DRAFT)	SHOULD BE	EXPLANATION
Baxter Estates, Village of	Participated	Did Not Participate	Had expressed interest via letter in 2004 but did not follow through in 2005/2006. Our spreadsheet still had them listed as 'participating'.
Farmingdale, Village of	Did Not Participate	Participated	Attended one meeting on March 9, 2006. Our spreadsheet still had them listed as 'not participating.'
Great Neck, Village of	Participated	Did Not Participate	Representatives attended from Great Neck Schools; we had improperly listed them on our spreadsheet under both the Village and the School District. The Village did not participate; the School District did.
Hewlett Harbor, Village of	Did Not Participate	Participated	No representatives attended meetings, but the Mayor and Deputy Mayor each submitted a Hazard ID Questionnaire. Our spreadsheet still had them listed as 'not participating'.
Oyster Bay Cove, Village of	Did Not Participate	Participated	No representatives attended meetings, but they did return the completed Hazard ID Questionnaire and Capability Assessment. Our spreadsheet still had them listed as 'not participating'.
Plandome Manor, Village of	Did Not Participate	Participated	Attended one meeting on November 14, 2005. Our spreadsheet still had them listed as 'not participating.'
Albertson Park/NYCAD	Albertson Park/NYCAD	Albertson Fire Company	Correct name of the entity was updated as per coordination with the entity's representative.
Baldwin UFSD	Baldwin UFSD	Baldwin Schools	Eliminated using the abbreviation.
ConEdison	Participated	Kept Apprised	A ConEdison representative was kept apprised of project progress via email, but did not attend meetings or provide feedback. A footnote was added to clarify.
Freeport Schools	Did Not Participate	Participated	Attended one meeting on November 28, 2005. Our spreadsheet still had them listed as 'not participating.'
Hempstead Schools	Did Not Participate	Participated	Attended one meeting on November 28, 2005. Our spreadsheet still had them listed as 'not participating.'
WPFD/Adelphi University	WPFD/Adelphi University	Williston Park Fire Department; Adelphi University (Listed Separately & Spelled Out)	WPFD and Adelphi University were previously shown on the same line as "WPFD/Adelphi University" because the Planning Group Member, James Smith, was a member of both. We have corrected this to show the Williston Park Fire Department on one line and Adelphi University on another.

2. Meeting Dates have been corrected as follows:

<i>This applies to pages iv and 10 of the June 2006 Draft</i>									
Summary:									
	All dates are correct on Page iv. Pm Page 10, CPG1 typo needs to be changed from October 14 to November 14.								
Details:									
	Page iv and 10 June 16, 2004 - the web site link had shown June 14, 2004 but Agenda said June 16th. Terry confirmed that 16th is correct, and will be correcting the web site page.								
	Page iv shows CPG1 on November 14 and Page 10 shows CPG1 on October 14. November 14 is correct. Anna will update Page 10.								

3. Additional information regarding Multi-Jurisdictional Planning Participation and Documentation of the Planning Process:

NYSEMO comments have been addressed in markups throughout part 1, and the new Appendix B.

PLAN ADOPTION RESOLUTIONS

In accordance with Part 201.6 of the Disaster Mitigation Act of 2000 (DMA 2000), Nassau County, New York, has developed this Multi-Jurisdictional Hazard Mitigation Plan to identify hazards that threaten the County and ways to reduce future damages associated with these hazards.

Following this page are the signed adoption resolutions of the County and all participating jurisdictions that have adopted this plan, authorizing municipal government staff to carry out the actions detailed herein.

Signed resolutions of adoption by all participating jurisdictions shall be inserted following this page before the Final Plan is submitted to FEMA.

DRAFT

The following resolution is a sample for the County to adopt the Plan.

Resolution No. _____

WHEREAS Nassau County is vulnerable to natural hazards such as coastal erosion, wave action, earthquakes, flooding, landslides, drought, and extreme winds, that can result in property loss, loss of life, economic hardship and threats to public health and safety;

WHEREAS a Nassau County Multi-Jurisdictional Hazard Mitigation Plan has been developed by the All Hazards Mitigation Planning Group (“Planning Group”) and the people of the County, to address the requirements of the Disaster Mitigation Act of 2000 (DMA 2000);

WHEREAS the Nassau County Multi-Jurisdictional Hazard Mitigation Plan recommends mitigation activities that will reduce losses to life and property affected by the natural hazards that face the County; and

WHEREAS a series of public meetings were held to develop and review the plan;

NOW, THEREFORE, BE IT RESOLVED by the Nassau County Legislature that:

- The Nassau County Multi-Jurisdictional Hazard Mitigation Plan (“the Plan”) is hereby adopted as an official plan of the County.
- The Nassau County All Hazards Mitigation Planning Group (“Planning Group”) is hereby recognized as the official advisory body for coordinating hazard mitigation planning and related implementation activities by the County.
- Nassau County officials and agencies are hereby directed to follow the Plan Maintenance section of the Plan to ensure effective monitoring, evaluation, and updates.
- Nassau County officials and agencies identified in the Implementation Strategy section of the Plan are hereby directed to implement the recommended activities assigned to them.
- Work progress reports shall be prepared by County entities responsible for implementing mitigation actions, and shall be prepared and submitted in accordance with the Plan Maintenance section of the Plan.
- An update to the plan will be triggered if changing situations have modified goals, objectives, or actions; if additional information is available to perform more accurate vulnerability assessments; or if it is determined by the Planning Group that the Plan no longer addresses current and expected future conditions. If the Planning Group determines that an update is not required at the end of the planning cycle (that is, five years from the date of this Resolution), then justification to this effect will be prepared and submitted to the New York State Emergency Management Office (NYSEMO) and Region II of the Federal Emergency Management Agency (FEMA).

ADOPTED this the _____ day of _____, 200_

[Administrative Head/Solicitor] of Nassau County, New York

APPROVED this the _____ day of _____, 200_

[President] of Nassau County Legislature, Nassau County, New York

ATTESTED AND FILED this the _____ day of _____, 200_

[Administrative Head/Solicitor] of Nassau County, New York

The following resolution is a sample for each participating jurisdiction to adopt the Plan.

Resolution No. _____

WHEREAS the [insert community name], Nassau County, is vulnerable to natural hazards such as coastal erosion, wave action, earthquakes, flooding, landslides, drought, and extreme winds, that can result in property loss, loss of life, economic hardship and threats to public health and safety;

WHEREAS a Nassau County Multi-Jurisdictional Hazard Mitigation Plan has been developed by the All Hazards Mitigation Planning Group (“Planning Group”) and the people of the County, to address the requirements of the Disaster Mitigation Act of 2000 (DMA 2000);

WHEREAS the Nassau County Multi-Jurisdictional Hazard Mitigation Plan recommends mitigation activities that will reduce losses to life and property affected by the natural hazards that face [insert community name]; and

WHEREAS a series of public meetings were held to develop and review the plan;

NOW, THEREFORE, BE IT RESOLVED by the [insert elected official and governing body] of the [insert community name], that:

- The Nassau County Multi-Jurisdictional Hazard Mitigation Plan (“the Plan”) is hereby adopted as an official plan of the [insert community name].
- [insert community name] officials and agencies are hereby directed to follow the Plan Maintenance section of the Plan to ensure effective monitoring, evaluation, and updates.
- [insert community name] officials and agencies identified in the Implementation Strategy section of the Plan are hereby directed to implement the recommended activities assigned to them.
- Work progress reports shall be prepared by [insert community name] entities responsible for implementing mitigation actions, and shall be prepared and submitted in accordance with the Plan Maintenance section of the Plan.

ADOPTED this the _____ day of _____, 200_

[Administrative Head/Solicitor] of [insert community name], Nassau County, New York

APPROVED this the _____ day of _____, 200_

[insert elected official] of [insert community name], Nassau County, New York

ATTESTED AND FILED this the _____ day of _____, 200_

[Administrative Head/Solicitor] of [insert community name], Nassau County, New York

EXECUTIVE SUMMARY

Across the United States and around the world, natural disasters occur each day, as they have for thousands of years. As the world's population and development have increased, so have the effects of these natural disasters. The time and money required to recover from these events often strain or exhaust local resources. The purpose of hazard mitigation planning is to identify policies, actions, and tools for implementation that will, over time, work to reduce risk and the potential for future losses. Hazard mitigation is best realized when community leaders, businesses, citizens, and other stakeholders join together in an effort to undertake a process of learning about hazards that can affect their area and use this knowledge to prioritize needs and develop a strategy for reducing damages.

Section 322, Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act ("the Stafford Act"), enacted by Section 104 of the Disaster Mitigation Act of 2000 ("DMA 2000"), provides new and revitalized approaches to mitigation planning. Section 322 continues the requirement for a State mitigation plan as a condition of disaster assistance, and establishes a new requirement for local mitigation plans. In order to apply for Federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with DMA 2000 and its implementing regulations (44 CFR Part 201.6).

While Nassau County has always sought ways to reduce their vulnerability to hazards, the passage of DMA 2000 helped County officials to recognize the benefits of pursuing a long-term, coordinated approach to hazard mitigation through hazard mitigation planning. In January of 2003, 32 local officials from Nassau County joined members of the New York State Emergency Management Office (NYSEMO) to conduct an analysis of the County's hazards using the automated program *HAZNY* (Hazards New York, an interactive program developed by the American Red Cross and the NYSEMO to rank a series of 26 hazards). The County also competed nationally for, and was later a recipient of, Fiscal Year 2003 Pre-Disaster Mitigation (PDM) grant funds from the Federal Emergency Management Agency (FEMA) for the purpose of developing this very hazard mitigation plan.

This **Nassau County Multi-Jurisdictional Hazard Mitigation Plan** has been prepared to meet the requirements of DMA 2000. It represents the collective efforts of citizens, elected and appointed government officials, business leaders, volunteers of non-profit organizations, and other stakeholders. Natural disasters cannot be prevented from occurring. However, over the long-term, the continued implementation of this Plan will gradually, but steadily, lessen the impacts associated with hazard events.

The Nassau County Multi-Jurisdictional Hazard Mitigation Plan has been developed by the Nassau County Hazard Mitigation Planning Group (the "Planning Group"), with support from outside consultants. The efforts of the Planning Group were headed by the Nassau County Office of Emergency Management's Hazard Mitigation Coordinator. The overall Planning Group was divided into a Core Planning Group and three Area Assessment Teams (one for membership from within the boundaries of each of the County's three towns: Oyster Bay, Hempstead, and North Hempstead).

The plan development process was initiated with an informational meeting on June 16, 2004. The process began in earnest with the Planning Group's Kickoff Meeting on October 20, 2005. Thereafter, the Core Planning Group met on November 14, 2005 and January 12, 2006. The North Hempstead Area Assessment Team met on November 17, 2005. The Oyster Bay and Hempstead Area Assessment Teams met separately on November 28, 2005. The full Planning Group met again on March 9, 2006 and June 6, 2006.

Community support is vital to the success of any hazard mitigation plan. The Planning Group provided opportunities for participation and input of the public and other stakeholders throughout the plan

development process, both prior to this Draft and before approval of the Final plan, allowing citizens to take part in the decisions that will affect their future. Press advisories were released for each of the Area Assessment Team meetings. A public notice providing an overview of the plan development process and where to go for additional information was published in *Newsday* on February 2, 2006. Nine document repositories were established in the Fall of 2005. In a new mitigation planning section of the Nassau County web site, the NCOEM posted information on the plan development process and where to go for additional information or comments beginning in the Fall of 2005; this web site is updated regularly. Area Assessment Team members reached out to the public and other stakeholders within their respective jurisdictions to get the word out through various means including legal notices, press releases, fact sheets, web site links, letters, and mitigation plan booth information at local fairs/conferences.

The hazard mitigation planning process consisted of the following key steps:

- Researching a full range of natural hazards to identify which hazards could affect the County;
- Identifying the location and extent of hazard areas;
- Identifying assets located within these hazard areas;
- Characterizing existing and potential future assets at risk;
- Assessing vulnerabilities to the most prevalent hazards; and
- Formulation and prioritization of goals, objectives, and mitigation actions to reduce or avoid long-term vulnerabilities to the identified hazards.

Natural hazards that can affect Nassau County that were studied in detail in the Plan are as follows:

- Coastal erosion
- Wave action;
- Earthquakes;
- Floods;
- Landslides;
- Drought;
- Severe weather events such as Hurricanes, Tornadoes, and Winter Storms/Ice Storms; and
- Extreme winds.

After evaluating these hazards and assets within the County to which they are vulnerable, the Planning Group developed a mitigation strategy to increase the disaster resistance of the County, along with procedures for monitoring, evaluating and updating the Plan to ensure that it remains a “living document.”

This Draft Plan is currently under review by the Planning Group, NYSEMO, FEMA, and the public and other stakeholders. Later, comments will be incorporated, and the County and all participating jurisdictions will each formally adopt the Final Plan. The Final Plan will include copies of adoption resolutions following Page i.

If you have any questions or comments on the Multi-Jurisdictional Hazard Mitigation Plan for Nassau County, New York, additional information can be obtained by contacting:

Terry Winters, Hazard Mitigation Coordinator
Nassau County Office of Emergency Management
100 Carman Avenue
East Meadow, New York 11554
Phone: (516) 573-0636
Email: twinters@nassaucountyny.gov

ACKNOWLEDGEMENTS

The following entities participated in the development of this plan on the Planning Group by attending one or more meetings since October of 2005 and/or providing information in support of the project:

Nassau County	Albertson Park Fire Company NYCAD
Atlantic Beach, Village of	Baldwin UFSD <u>Schools</u>
Baxter Estates, Village of	ConEdison *
Bellerose, Village of	Downtown Glen Cove Business Improvement District
Brookville, Village of	<u>Freeport Schools</u>
Centre Island, Village of	Great Neck Schools
East Hills, Village of	<u>Hempstead Schools</u>
<u>Farmingdale, Village of</u>	Hicksville Fire Department
Floral Park, Village of	Jericho Hamlet
Flower Hill, Village of	LIPA/KeySpan
Garden City, Village of	Locust Valley
Glen Cove, City of	Manhasset Chamber of Commerce
Great Neck, Village of	Massapequa Civic Association
Great Neck Plaza, Village of	Merrick Fire Department
Hempstead, Town of	Nassau Community College
Hempstead, Village of	Nassau County Superintendents of Buildings and Grounds Association
<u>Hewlett Harbor, Village of</u>	Nassau County Village Officials Association
Island Park, Village of	Nassau Shores Civic Association
Kings Point, Village of	New York State DOT (Long Island)
Lake Success, Village of	Oyster Bay Civic Association
Lattingtown, Village of	Shoreville Park Civic Association
Lawrence, Village of	United States Post Office (Oyster Bay)
Long Beach, City of	WPFD/Adelphi University <u>Williston Park Fire Department</u>
Lynbrook, Village of	<u>Adelphi University</u>
Malverne, Village of	Seaford Schools
Massapequa Park, Village of	
Mineola, Village of	
Munsey Park, Village of	
Muttontown, Village of	
New Hyde Park, Village of	
North Hempstead, Town of	
Old Brookville, Village of	
<u>Oyster Bay Cove, Village of</u>	
Plandome Heights, Village of	
<u>Plandome Manor, Village of</u>	
Plandome Village, Village of	
Port Washington North, Village of	
Rockville Centre, Village of	
Roslyn Harbor, Village of	
Roslyn, Village of	
Russel Gardens, Village of	
Saddle Rock, Village of	
Sands Point, Village of	
Sea Cliff, Village of	
Stewart Manor, Village of	
Valley Stream, Village of	
Westbury, Village of	

** ConEdison was kept apprised of project activities but did not opt to attend meetings or provide feedback.*

The following jurisdictions have pursued their own single-jurisdiction hazard mitigation plans and did not adopt the County plan. However, several attended one or more meetings in support of the larger county-wide planning project.

Bayville, Village of
East Rockaway, Village of
Freeport, Village of
Manorhaven, Village of
Oyster Bay, Town of

URS Corporation (Wayne, NJ) acted as the plan development consultant providing hazard mitigation planning services, along with their public outreach sub consultant at Omni Consulting, Inc.

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INTRODUCTION

Purpose

Nassau County is susceptible to a number of different natural hazards. These natural hazards have the potential to cause property loss, loss of life, economic hardship, and threats to public health and safety. While an important aspect of emergency management deals with disaster recovery – those actions that a community must take to repair damages and make itself whole in the wake of a natural disaster – an equally important aspect of emergency management involves hazard mitigation. Hazard mitigation measures are efforts taken *before* a disaster happens to lessen the impact that future disasters of that type will have on people and property in the community. They are things you do today to be more protected in the future.

Recognizing the risks that natural hazards pose to Nassau County, the Office of Emergency Management submitted an application, and was approved for, Fiscal Year 2003 Pre-Disaster Mitigation (PDM) grant monies from the Federal Emergency Management Agency (FEMA) to be used to develop a hazard mitigation plan for the County.

This **Nassau County Multi-Jurisdictional Hazard Mitigation Plan** (the “Plan”) has been developed by the Nassau County Hazard Mitigation Planning Group (the “Planning Group”), with support from outside consultants at URS Corporation (“URS,” the prime contractor responsible for providing the Planning Group with hazard mitigation planning support services) and Omni Consulting, Inc. (“Omni,” URS’ public outreach sub-consultant). The Plan represents the collective efforts of citizens, elected and appointed government officials, business leaders, volunteers of non-profit organizations, and other stakeholders.

Through the development of this Plan, the Planning Group has identified the natural hazards that could affect the County, and has evaluated the risks associated with these hazards. The successful implementation of this Plan will make Nassau County more disaster-resistant because the County has taken the initiative to recognize the benefits that can be gained by planning ahead and taking measures to reduce damages before the next disaster strikes. The Plan will also allow Nassau County and participating jurisdictions to comply with the Disaster Mitigation Act of 2000 (DMA 2000) and its implementing regulations (44 CFR Part 201.6), thus resulting in eligibility to apply for Federal aid for technical assistance and post-disaster hazard mitigation funding.

Natural disasters cannot be prevented from occurring. However, over the long-term, the continued implementation of this Plan will gradually, but steadily, lessen the impacts associated with hazard events.

About Nassau County

Nassau County

Nassau County is located on the western portion of Long Island, New York. Long Island is the longest island in the United States, extending from New York City easterly about 118 miles in length and approximately 20 miles at its widest point. The Island is divided into four counties: Kings County, Queens County, Nassau County and Suffolk County. Nassau County is bounded by Queens County to the west, Suffolk County to the east, and is bordered by the Atlantic Ocean to the south and the Long

Island Sound to the north. Across Long Island Sound, to the north, sits its neighboring state of Connecticut.

With the benefit of important location factors, principally highway and rail, Nassau County has become one of the fastest growing regions in the country. With a landmass of 286.69 square miles (183,680 acres) and 166.39 square miles of water, Nassau County serves a population of 1.3 million people (1,334,544). (Source: U.S. Census, 2000.)

According to the U.S. Census, the population of Nassau County in 1990 was 1,287,348; whereas, in 2000 it grew to 1,334,544 – an increase of 3.5 percent over two years. Table 1 shows County and Town population changes from 1970 through 2000.

Municipality	1970	1980	1990	2000	1970-2000 Change	1980-2000 Change	1990-2000 Change	% Change 1970-2000	% Change 1980-2000	% Change 1990-2000	Housing Units
Nassau County	1,428,080	1,321,582	1,287,348	1,334,544	-93,536	12,962	47,196	-7.0%	1.0%	3.5%	458,151
Hempstead	801,592	738,517	725,639	755,924	-45,668	17,407	30,285	-6.00%	2.30%	4.17%	252,286
North Hempstead	235,007	218,624	211,393	222,611	-12,396	3,987	11,218	-5.56%	1.79%	5.30%	78,927
Oyster Bay	333,342	305,750	292,657	293,925	-39,417	-11,825	1,268	-13.41%	-11.00%	0.43%	101,076

In 2004, the total population of the County was 1,317,054 – a decrease of approximately 1.3 percent from the year 2000. Although the population of the County has slowed down since its boom years post-World War II, the County still continues to be a major suburban center. (Source: U.S. Census, 1990 and 2000, 2004 American Community Survey, and 1998 Nassau County Comprehensive Plan.)

According to the 1990 U.S. Census, the population density per square mile of land in Nassau County was 4,489 persons per square mile; whereas, in the 2000 U.S. Census, there were 4,655 persons per square mile – an increase of 244 more persons per square mile.

In Nassau County, there are two (2) cities, three (3) towns and sixty-four (64) incorporated villages. They are the Cities of Glen Cove and Long Beach; Towns of Hempstead, North Hempstead, and Oyster Bay; and Villages of Atlantic Beach, Bellerose, Cedarhurst, East Rockaway, Floral Park, Freeport, Garden City, Hempstead, Hewlett Bay Park, Hewlett Harbor, Hewlett Neck, Island Park, Lawrence, Lynbrook, Malverne, Mineola, New Hyde Park, Rockville Centre, South Floral Park, Stewart Manor, Valley Stream, Woodsburgh, Baxter Estates, East Hills, East Williston, Flower Hill, Great Neck, Great Neck Estates, Great Neck Plaza, Kensington, Kings Point, Lake Success, Manorhaven, Munsey Park, North Hills, Old Westbury, Plandome, Plandome Heights, Plandome Manor, Port Washington North, Roslyn, Roslyn Estates, Roslyn Harbor, Russell Gardens, Saddle Rock, Sands Point, Thomaston, Westbury, Williston Park, Bayville, Brookville, Centre Island, Cove Neck, Farmingdale, Lattingtown, Laurel Hollow, Massapequa Park, Matinecock, Mill Neck, Muttontown, Old Brookville, Oyster Bay Cove, Sea Cliff, and Upper Brookville.

Figure 1 depicts the location of Nassau County in relation to the rest of the State of New York.

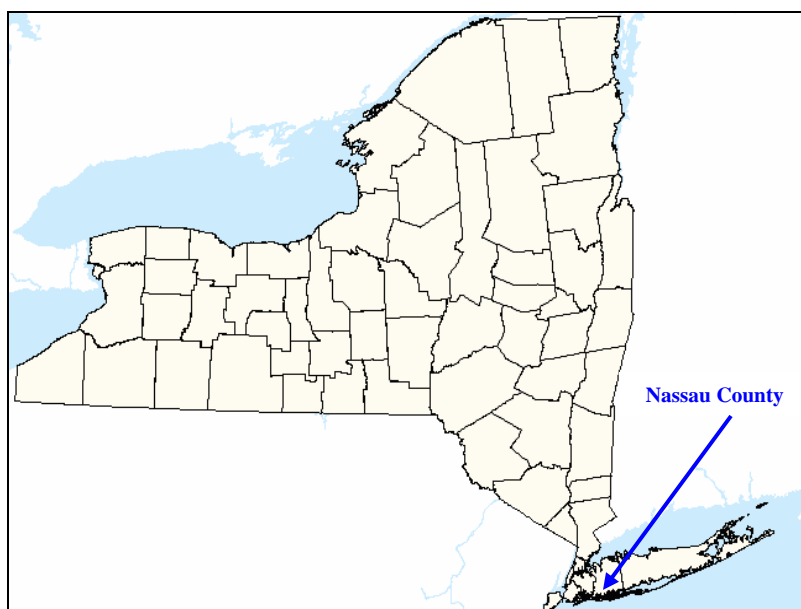


Figure 1. Map of New York State and Nassau County

Source: New York State Geographic Systems Clearinghouse, online at <http://www1.nysgis.state.ny.us/mainmap.cfm?FIPS=36059>

Nassau County's largest natural waterways – the Long Island Sound and the Atlantic Ocean – support a thriving local tourism, housing, economic and recreation base. Combined with the County's close proximity and transportation linkages to New York City, Nassau County is both a point of origin and a destination place for thousands of commuters and visitors each day.

Off the northern coast of Nassau County are offshore islands, mainland wetlands and offshore waters, bays and coves, including Little Neck Bay, Manhasset Bay and Hempstead Harbor which are the waters that constitute part of Long Island Sound between New York and Connecticut. These bays, along with the Long Island Sound, are referred to as the Northern Bays. Further east is Oyster Bay Harbor which borders the Suffolk County bays.

The Northern Bays and Oyster Bay Harbor are primarily an aquatic habitat complex with relatively small areas of land as a result of densely urbanized, heavily populated communities. In these waters, high concentrations of fish and wildlife can be found, including such species as waterfowl, American black duck, Canadian goose, marine shellfish, finfish (striped bass, scup, bluefish, winter flounder and blackfish, for example) and hard-shelled clam beds. Oyster Bay Harbor is possibly the most oyster-producing water body in the State of New York, and possibly the region. American oysters are common in these waters.

FEMA Disaster Declarations

Disaster declarations, for the county or counties affected by a disaster, are declared by the President of the United States under the authority of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the "Stafford Act"). FEMA then manages the entire process, including making federally-funded assistance available in declared areas; coordinates emergency rescue and response efforts; provides emergency resources; and provides other related activities/funding in the process of aiding citizens and local governments in a nationally-declared disaster. Tables 2 and 3 provide a summary of disaster and

emergency declarations for the State of New York, with an indication as to whether Nassau County was part of the declared area.

Table 2 New York State Major Disaster Declarations: 1954 – 2005 (Source: FEMA, online at http://www.fema.gov/news/disasters_state.fema?id=36)				
Year	Date	Disaster Type	Disaster #	Was Nassau County Declared? (Y/N/UNK)
2005	04/19	Severe Storms and Flooding	1589	N
2004	10/01	Tropical Depression Ivan	1565	N
2004	10/01	Severe Storms and Flooding	1564	N
2004	08/03	Severe Storms and Flooding	1534	N
2003	08/29	Severe Storms, Tornadoes and Flooding	1486	N
2003	05/12	Ice Storm	1467	N
2002	05/16	Earthquake	1415	N
2002	03/01	Snowstorm	1404	N
2001	09/11	Terrorist Attack	1391	Y
2000	07/21	Severe Storms	1335	N
1999	09/19	Hurricane Floyd	1296	Y
1998	09/11	Severe Storms	1244	N
1998	07/07	Severe Storms and Flooding	1233	N
1998	06/16	New York Severe Thunderstorms and Tornadoes	1222	N
1998	01/10	Severe Winter Storms	1196	N
1996	12/09	Severe Storms/Flooding	1148	UNK
1996	11/19	Severe Storms/Flooding	1146	UNK
1996	01/24	Severe Storms/Flooding	1095	UNK
1996	01/12	Blizzard	1083	UNK
1993	04/02	World Trade Center Explosion	984	UNK
1992	12/21	Coastal Storm, High Tides, Heavy Rain, Flooding	974	UNK
1991	09/16	Hurricane Bob	918	UNK
1991	03/21	Severe Storm, Winter Storm	898	UNK
1987	11/10	Severe Winter Storm	801	UNK
1987	05/15	Flooding	792	UNK
1985	10/18	Hurricane Gloria	750	UNK
1985	03/22	Snow Melt, Ice Jams	734	UNK
1985	03/20	Flooding	733	UNK
1984	09/25	Severe Storms, Flooding	725	UNK
1984	04/17	Coastal Storms, Flooding	702	UNK
1977	02/05	Snowstorms	527	UNK
1976	09/03	Hurricane Belle	520	UNK
1976	07/21	Severe Storms, Flooding	515	UNK
1976	06/29	Flash Flooding	512	UNK
1976	03/19	Ice Storm, Severe Storms, Flooding	494	UNK
1975	10/02	Severe Storms, Heavy Rain, Landslides, Flooding	487	UNK
1974	07/23	Severe Storms, Flooding	447	UNK
1973	07/20	Severe Storms, Flooding	401	UNK
1973	03/21	High Winds, Wave Action, Flooding	367	UNK
1972	06/23	Tropical Storm Agnes	338	UNK
1971	09/13	Severe Storms, Flooding	311	UNK
1970	07/22	Heavy Rains, Flooding	290	UNK
1969	08/26	Heavy Rains, Flooding	275	UNK
1967	10/30	Severe Storms, Flooding	233	UNK
1965	08/18	Water Shortage	204	UNK
1963	08/23	Heavy Rains, Flooding	158	UNK
1962	03/16	Severe Storm, High Tides, Flooding	129	UNK
1956	03/29	Flood	52	UNK
1955	08/22	Hurricane, Floods	45	UNK
1954	10/07	Hurricanes	26	UNK

Table 3 New York State Emergency Declarations: 1974 – 2005 (Source: FEMA, online at http://www.fema.gov/news/disasters_state.fema?id=36)				
Year	Date	Emergency Type	Emergency #	Was Nassau County Declared? (Y/N/UNK)
2005	09/30	Hurricane Katrina Evacuation	3262	Y
2004	03/03	Snow	3195	N
2003	08/23	Power Outage	3186	Y
2003	03/27	Snowstorm	3184	Y
2003	02/26	Snowstorm	3173	N
2002	01/01	Snowstorm	3170	N
2000	12/04	Snow Storm	3157	N
2000	10/11	Virus Threat	3155	Y
1999	09/18	Hurricane Floyd	3149	N
1999	03/10	Winter Storm	3138	N
1999	01/15	Winter Storm	3136	N
1993	03/17	Severe Blizzard	3107	N
1980	05/21	Chemical Waste, Love Canal	3080	N
1978	08/07	Chemical Waste, Love Canal	3066	N
1977	01/29	Snowstorms	3027	N
1974	11/02	Flooding (NYS Barge Canal)	3004	N

The northern sections of Nassau County are less densely populated than the southern sections of Nassau County. Generally, the more commercialized areas in Nassau County are located in centrally-located highly-developed marketable areas along major highway routes and shopping malls. Some of these areas are: Mitchel Field/Roosevelt Field; Town of Oyster Bay/Long Island Expressway; Lake Success/New Hyde Park; Mineola/Garden City; Great Neck Peninsula; and the Village of Hempstead. Other areas of commercial properties are located outside these large commercially-developed parts of the County in: the Villages of Rockville Center and Valley Stream; the City of Glen Cove; and the unincorporated areas of Bethpage and Port Washington.

Infrastructure in Nassau County

Water

Nassau County has 49 public water systems. Of these, 44 are community water systems, and 5 are non-community water systems. Water is supplied via natural rainfall, which is filtered down into aquifers and supplied to residents' homes through their respective water system.

Public Health

Sixteen hospitals, 12 dialysis centers, and 34 nursing facilities located throughout the County. Nassau University Medical Center is a specialty hospital, providing treatment to burn victims through their burn unit.

Government

There are 14 county government-owned and operated facilities throughout Nassau County that are considered symbolic and essential in maintaining the continuity of government. The most critical facilities are as followed.

- The Correctional Facility;
- Supreme Court;
- County Court;

- 1st through 4th District Courts;
- Family Court;
- The Old Court House;
- The County Office Building in Mineola;
- The Juvenile Detention Center;
- The Ralph G. Caso County Executive Building;
- The Fire Marshall's Office; and
- Police Headquarters.

Defense Industrial Base

Nassau County is host to three active military installations.

Recreation and Entertainment

Nassau County has some of the finest parks and recreation facilities; and museums and preserves in the nation. The County has 22 parks and recreation facilities, along with 18 museums and preserves, with a total of 5,600 acres. There is a vast mix of parks ranging from large, highly-populated, offering a variety of outdoor activities (with full-time park staff), to smaller parks with a single athletic field or small "green" area. There are also museums and preserves which provide a sampling of the typical ecosystems found on Long Island (Prairie-Hempstead Plains and Upland Forest). The Prairie-Hempstead Plains in the Town of Hempstead in Nassau County is the only remaining example of "unique" grassland community that was, historically, the largest sandplain grassland on the East Coast. The vegetation of the sandplain grasslands contains bushy rockrose and other rare plant species, including green milkweed, flax-flowered nutrush, stargrass and slender beadgrass. (Source: U.S. Wildlife Service, National Conservation Training Center.)

Additionally, Nassau Coliseum, in Uniondale, is home to the New York Islanders professional hockey team, as well as the site of many large concerts and other events. There are also shopping malls (i.e., Roosevelt Field Mall), movie theatres, beaches and other entertainment venues throughout Nassau County.

Tourism

Nassau County has a robust tourism industry. The County experiences thousands of domestic and international visitors on a per annum basis.

Information and Telecommunications

Nassau County has several commercial telecommunication hubs, including both primary and secondary processing stations. Loss of a telecommunications component in Nassau County reduces the County's ability to communicate regionally, nationally, and internationally; and would impact emergency response and preparedness capabilities; and economic productivity.

Emergency Services

Nassau County has eight police precincts, 21 village police precincts, and 71 Fire Departments, which are broken down into nine battalions. In addition, there are six Volunteer Ambulance Corps consisting of the following resources:

- 15 ambulances;
- 8 Chiefs' cars; and
- 321 total personnel.

Energy

The Long Island Power Authority (LIPA) and KeySpan Corporation provide Nassau County residents their respective gas and electricity. KeySpan owns and operates the gas system; on the electric side, LIPA owns the transmission & distribution (T&D) system, and the system is operated and maintained under contract by KeySpan. KeySpan also owns and operates the electric power plants, which supply energy to the LIPA customers. In addition, several cables crossing Long Island Sound allow LIPA to import power from the north, when economically advantageous, and there are several independent power producers as well. Finally, the Villages of Freeport and Rockville Centre own and operate their own small electric systems, using their own generation or purchased power to serve their municipalities. Key energy assets are briefly mentioned below for additional clarification.

- Electric Generation. In addition to the two municipalities, the primary generators of electricity in Nassau County are:

E F Barrett Station – Island Park
Glenwood Station – Glenwood Landing

- Electric Transmission & Distribution. The key assets in the electric T&D system are the substations. The most important are:

East Garden City
Newbridge Road, Plainview
Shore Road, Glenwood Landing
Lake Success

- Gas Distribution. The primary supply to the gas system in Nassau County is at the gate station in Long Beach. Other key regulator stations in the distribution system are located in Garden City, Inwood and Lake Success.

Transportation

Nassau County has 23 major roadways and thoroughfares and two major bridges that support traffic to and from surrounding communities within the County. The Long Island Expressway runs through the entire County. There are five major State thoroughfares that run through Nassau County, with six additional bridges that impact traffic traveling in all directions. These State thoroughfares include: Northern State Parkway, Meadowbrook Parkway, Wantagh Parkway, Loop Parkway and Hempstead Turnpike. In addition, there are six bridges on three of these State thoroughfares. Loss of any of these roadways/ thoroughfares would severely curtail traffic and negatively impact traffic flow on other routes.

The Long Island Rail Road (LIRR) holds the distinction of being the busiest railroad in North America. It carries an average of 290,000 passengers each weekday on 735 daily trains. The LIRR system is comprised of nine branches, stretching from the eastern tip of Montauk, Long Island to Penn Station in the heart of Manhattan, approximately 120 miles away; all of these trains pass through Nassau County.

The LIRR has seven major rail stations that provide service in Nassau County. They are: Hicksville, Westbury, Freeport, Valley Stream, Mineola, Great Neck, and Hempstead.

Several bus lines also operate in Nassau County; these lines typically involve a lease or an operating agreement between Nassau County and the Metropolitan Transportation Authority. Through the operating agreement, a network is established that links 96 communities via 51 routes in Nassau County, western Queens and eastern Suffolk Counties, including 45 railroad stations, 4 major subway stations and 7 major shopping malls. Fleet: 317 buses traveling 30,729 daily miles, serving 3,400 bus stops.

Media

Nassau County is part of Long Island's local media center. WLIR is the County's federally-designated Emergency alert System (EAS), with news events covered primarily by News 12 and Newsday.

Plan Development Process

Multi-Jurisdictional Approach

Nassau County took a multi-jurisdictional approach to preparing its hazard mitigation plan. The County had resources (i.e., funding, data, GIS, etc.) which local jurisdictions lacked. However, the County could not develop the plan on its own. To undertake such a regional planning effort, the County needed to involve its member municipalities since only they have the legal authority to enforce compliance with land use planning and development issues.

The County undertook an intensive effort to involve all ~~64~~⁶⁹ municipalities in the planning process. In June of 2004, NCOEM invited municipalities and other stakeholders to an informational meeting regarding the plan development process and opportunities to participate. This was followed up with a letter to each Town, City, and Village requesting letter confirmation regarding whether a municipality wished to participate with the County. Beginning in the Fall of 2005, every jurisdiction was notified of meetings via email (or fax, if an email address was not available).

The following entities participated in the development of this plan on the Planning Group by attending one or more meetings since October of 2005 and/or providing information in support of the project:

Nassau County	Albertson Park ^{NYCAD} Fire Company
Atlantic Beach, Village of	<u>Baldwin UFSD Schools</u>
Baxter Estates, Village of	ConEdison *
Bellerose, Village of	Downtown Glen Cove Business Improvement District
Brookville, Village of	<u>Freeport Schools</u>
Centre Island, Village of	Great Neck Schools
East Hills, Village of	<u>Hempstead Schools</u>
<u>Farmingdale, Village of</u>	Hicksville Fire Department
Floral Park, Village of	Jericho Hamlet
Flower Hill, Village of	LIPA/KeySpan
Garden City, Village of	Locust Valley
Glen Cove, City of	Manhasset Chamber of Commerce
Great Neck, Village of	Massapequa Civic Association
Great Neck Plaza, Village of	Merrick Fire Department
Hempstead, Town of	Nassau Community College
Hempstead, Village of	Nassau County Superintendents of Buildings and Grounds Association
<u>Hewlett Harbor, Village of</u>	Nassau County Village Officials Association
Island Park, Village of	Nassau Shores Civic Association
Kings Point, Village of	New York State DOT (Long Island)
Lake Success, Village of	Oyster Bay Civic Association
Lattingtown, Village of	Shoreville Park Civic Association
Lawrence, Village of	United States Post Office (Oyster Bay)
Long Beach, City of	WPPFD/Adelphi University <u>Williston Park Fire Department</u>
Lynbrook, Village of	<u>Adelphi University</u>
Malverne, Village of	Seaford Schools
Massapequa Park, Village of	
Mineola, Village of	
Munsey Park, Village of	

Muttontown, Village of
 New Hyde Park, Village of
 North Hempstead, Town of
 Old Brookville, Village of
Oyster Bay Cove, Village of
 Plandome Heights, Village of
Plandome Manor, Village of
 Plandome Village, Village of
 Port Washington North, Village of
 Rockville Centre, Village of
 Roslyn Harbor, Village of
 Roslyn, Village of
 Russel Gardens, Village of
 Saddle Rock, Village of
 Sands Point, Village of
 Sea Cliff, Village of
 Stewart Manor, Village of
 Valley Stream, Village of
 Westbury, Village of

** ConEdison was kept apprised of project activities but did not opt to attend meetings or provide feedback.*

The following jurisdictions are preparing their own single-jurisdiction hazard mitigation plans and did not adopt the County plan. However, several attended one or more meetings in support of the larger county-wide planning project.

Bayville, Village of
 East Rockaway, Village of
 Freeport, Village of

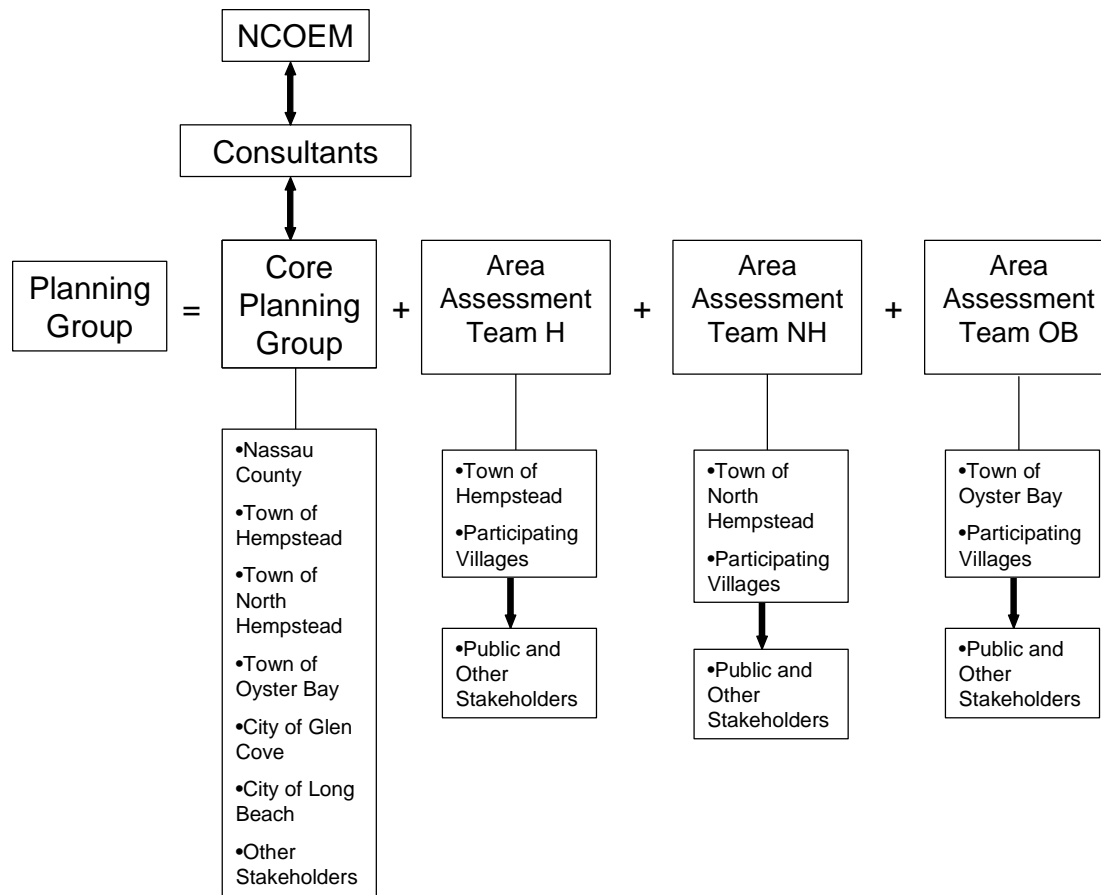
Manorhaven, Village of
 Oyster Bay, Town of

Nassau County Hazard Mitigation Planning Group

This Plan has been developed by the **Nassau County Hazard Mitigation Planning Group (the “Planning Group”)**, with support from an outside consulting firm (URS Corporation, “URS”). The efforts of the Planning Group were headed by the Nassau County Office of Emergency Management’s Hazard Mitigation Coordinator. The Plan represents the collective efforts of citizens, elected and appointed government officials, business leaders, volunteers of non-profit organizations, and other stakeholders.

The overall **Planning Group** consisted of members of Nassau County, each participating jurisdiction, and other stakeholders. The overall Planning Group was divided into a **Core Planning Group** and **three Area Assessment Teams**. All members of the Core Planning Group and the three Area Assessment Teams were also members of the overall Planning Group.

For more details on each jurisdiction’s specific involvement, attendance at meetings, and the activities conducted, please see summary tables located in Appendix B.



The **Core Planning Group** was responsible for day-to-day plan formulation activities and decision making. Town representatives on the Core Planning Group were responsible for conducting an outreach program for the municipalities and other stakeholders within their respective boundaries through establishing **Area Assessment Teams**. Since Nassau County's three towns (Oyster Bay, Hempstead, and North Hempstead) comprise the entire footprint of the County, each Area Assessment Team consisted of membership from smaller municipalities within its respective town boundaries.

The following is an overview of meetings held during the plan development process. Additional information, such as meeting agendas, presentations, handouts, and minutes (including those in attendance at each meeting) is provided on the Nassau County web site at www.nassaucountyny.gov. [An overview of meeting agendas and outcomes is included in Appendix B.](#)

- June 16, 2004 – Informational Session
- October 20, 2005 – Planning Group Meeting #1 – Kickoff Meeting
- ~~October~~ November 14, 2005 – Core Planning Group Meeting #1
- November 17, 2005 – North Hempstead Area Assessment Team Meeting
- November 28, 2005 – Oyster Bay Area Assessment Team Meeting
- November 28, 2005 – Hempstead Area Assessment Team Meeting
- January 12, 2006 – Second Core Planning Group Meeting #1 (a.m. session) and Core Planning Group Meeting #2 (p.m. session)
- March 9, 2006 – Planning Group Meeting #2
- June 6, 2006 – Planning Group Meeting #3

The Role of the Contractors in the Plan Development Process

This Hazard Mitigation Plan is the County's plan; as such, its success rests on the decisions and directions set by the Planning Group members throughout the plan development process. URS was contracted by Nassau County to work with the County OEM and the Planning Group to assist them in developing a plan that would meet the requirements of DMA 2000. URS was the prime contractor responsible for providing the Planning Group with hazard mitigation planning support services, while Omni Consulting was a sub-consultant to URS providing public outreach support.

URS assisted the Planning Group by conducting the analyses necessary to provide the Planning Group with the information they needed to make sound decisions, and helped guide them through the necessary steps of the plan development process. The Planning Group, in turn, took the lead by including the local community, assessing the alternatives, and ultimately selecting the course of action to be followed. At the end of the planning process, URS prepared this Plan text (with feedback from the Planning Group) to document the Group's efforts, along with hazard information and findings, in a manner consistent with applicable regulations (DMA 2000), criteria (44 CFR Part 201.6), and guidance (FEMA's Mitigation Planning "How-To" Guides; FEMA's Multi-Hazard Mitigation Planning Guidance document of March 2004).

A series of four Guidance Memorandums were distributed to the Planning Group by URS Corporation, at various meetings and also were posted on the County's mitigation planning web site. These four memos provide a summary of key information presented in DMA 2000, its implementing regulations (IFR), and the FEMA How-To Guides. The memos are intended to serve as a supplement – and not as a replacement – to the FEMA documents. A summary of the Guidance Memos is presented below.

Combined Guidance Memorandum #1 and #2 - Stakeholder Participation and Outreach Plan, dated October 19, 2005, describes the project and its goal of identifying the risks associated with natural hazards in Nassau County. It is centered on developing the structure of the Planning Group and identifying the jurisdictions that are interested in participating in the plan; reaching out to various parties (general public, local residents, business owners, non-profit organizations, community leaders and other stakeholders) during the development and maintenance processes; identifying the role of contractors in the planning process; and ultimately, documenting the planning process.

Guidance Memorandum #3 - Plan Maintenance Procedures: Monitoring, Evaluating and Updating the Plan, dated January 4, 2006, highlights the essential steps necessary for monitoring, evaluating and maintaining the plan, and its value as a vital tool for mitigating hazards and reducing risk. The memo stresses several key factors that need to be undertaken by the Planning Group: organizing resources, i.e., identifying and organizing interested parties, including the public, during the planning process; assessing the risks, i.e., identifying the natural hazards that generally affect Nassau County; how the communities will be impacted by the hazards; and developing a mitigation plan, i.e., once the risks have been identified, the Planning Group determines the methods and strategies for avoiding or minimizing the risks. The memo also conveys the importance of following the regulations that require the plan to be monitored, evaluated and updated within a five-year cycle, and the importance of periodically measuring the effectiveness of the actions contributing to the overall success of the plan.

Guidance Memorandum #4 - Plan Integration, dated January 4, 2006, recapitulates the importance of using existing processes and resources by the Planning Group during plan implementation; thus, saving time and effort in meeting the plan's goals and objectives. The memo states that by following the

requirements and key steps previously discussed, the next essential goal is taking action by integrating the objectives into daily activities and by implementing the plan in a timely manner.

The memos are valuable tools that guide the Planning Group through each step toward the establishment of the hazard mitigation plan. As such, these memos assist the Planning Group through the planning process that leads to the formal adoption of the plan.

Public Involvement in the Plan Development Process

The role of public involvement in the plan development process is to provide the general public with some variety of means to not only learn about the process that the Planning Group is undertaking, but to voice concerns and to provide input throughout the planning process. With support and guidance from URS, a range of activities were undertaken to: (a) alert the public to the fact that the Planning Group was working to develop this Hazard Mitigation Plan, and (b) provide the public an opportunity to participate with a forum to ask questions, and submit comments and/or suggestions on the process.

The Planning Group undertook the following actions to raise public awareness of the plan development process and provide the public with a forum for providing feedback to the Planning Group. To date, no public feedback/comments have been received on the Draft Plan. Any comments received in time to be incorporated into the Final will be integrated. As this is a living document, other comments will be integrated in future maintenance cycles and plan updates.

- The public was invited to attend all meetings of the three Area Assessment Teams. They were notified about these meetings through press advisories and notifications made by Area Assessment Team members.
- The public will be invited to review and provide comments on this Draft Plan.
- A legal notice was published in Newsday on February 2, 2006 providing an overview of the planning process and where to obtain additional information and/or provide comments.
- A Hazard Mitigation Planning link was created on the NCOEM web site in the fall of 2005 to provide information about the process, and where to obtain additional information and/or provide comments. The site is updated on a regular basis.
- Nine document repositories were established in the fall of 2005 to provide information to interested parties who may not have computer access required to view information posted on the web site.
- A Fact Sheet was prepared in January 2006 for all Planning Group members to share with their constituents; this was also made available on line and in the document repositories.
- The Nassau County Village Officials Association was represented on the Planning Group and regularly remarked on the planning process throughout their normal daily activities to get the word out about the multi-jurisdictional plan and advise where additional information and/or comments could be addressed.
- Several Civic Associations were represented at Planning Group Meetings.
- The Town of Oyster Bay sent out letters to Civic Associations in November of 2005.
- The Village of Malverne published a legal notice in the March 23, 2006 edition of the “Village Herald” newspaper, advising of the Village’s participation in the process and where to go to ask questions or to become involved.
- The Village of Valley Stream posted the mitigation planning Fact Sheet at the Emergency Management Office and Village Clerk’s Office on March 10, 2006. Valley Stream also added a link on its web site to the overall mitigation planning web site on March 14, 2006.
- The Village of Flower Hill spoke at a Board Meeting on December 3, 2005, regarding the mitigation plan development process. On March 16, 2006, Flower Hill also met with all three fire

departments and police departments, Roslyn, Port Washington, Manhasset, Lakeville, and the Nassau County 6th precinct to discuss hazard identification. On March 23, 2005, Flower Hill met with all three water departments, Saint Frances Hospital, Roslyn, Port Washington, Manhasset, Lakeville to discuss hazard identification.

- On May 10, 2006, the Village of Mineola posted the Fact Sheet at: the Mineola Volunteer Ambulance Corp., the Department of Public Works, the Community Center, Auxiliary Police Office, Village Library, Fire Department Headquarters, Post Office, and Water Department. On May 31, 2006, the Village posted a link on its web site to the overall county mitigation planning web site.
- On April 30, 2006, the Merrick Fire Department participated in the Community Street Fair with a poster board and discussed hurricane awareness and the overall county mitigation planning web site.
- On February 8, 2006, the Town of North Hempstead Director of Communications issued a press release providing information about the Town's participation in the multi-jurisdictional planning process and requesting feedback. Also in February, the Town's Director of Emergency Management worked with the Deputy Commissioner of Public Safety to post information on the town web site regarding the hazard mitigation plan with a link to the overall county mitigation planning web site.
- The Village of Plandome Heights, on March 3, 2006, spoke to council to introduce the EMC and speak about OEM, NIS, and Village EMC responsibilities. On April 15, 2006, the EMC conducted an inspection of the floodplain and sewer overruns, taking photographs and notes of current conditions and sites needing improvement. On June 5, 2006, the EMC conducted a reinspection of the floodplain and sewer overruns. On the same date, the EMC again spoke in front of council to discuss hazards within the community and the mitigation plan and upcoming hurricane season.

The Planning Group pursued a variety of different ways to involve and engage the public during the planning process, in addition to ensuring that the participating jurisdictions were also fully aware of the process and were able to contribute and voice their concerns as well as the general public. As such, the below list of key activities were employed:

- *PlanFacts* fact sheet
- Document Repositories
- Nassau County Web site
- Legal Notification

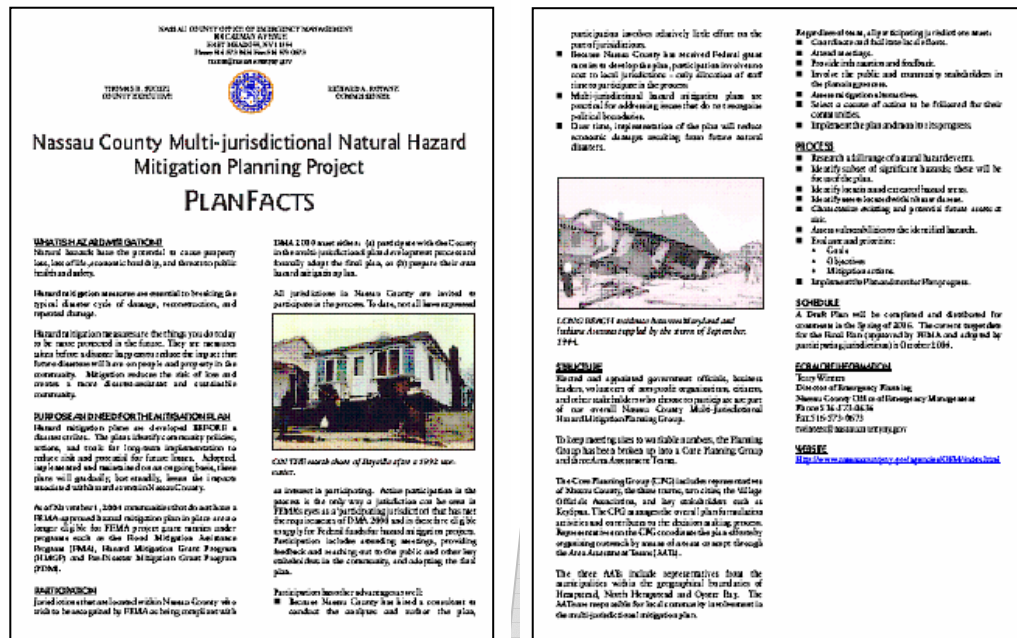
PlanFacts

The Planning Group increased public awareness of the hazard mitigation plan process by providing a two-page summation on hazard mitigation facts and the mitigation planning process to the public, community leaders, business owners, local residents and other stakeholders in the plan. The flyer, entitled *Nassau County Multi-Jurisdictional Natural Hazard Mitigation Planning Project PlanFacts*, furnishes pertinent plan data that explains the purpose and need for the mitigation plan in Nassau County.

The two-page flyer begins by providing a basic understanding to "What is hazard mitigation?" It then contains information on the development process and how jurisdictions can participate in the plan or prepare their own hazard mitigation plans in compliance with DMA 2000 requirements. It also provides an overview of the Hazard Mitigation Planning Group members and their roles; the steps in the mitigation process (goals, objectives, natural hazards evaluation, etc.); the plan scheduled target completion date (October 2006); and the County contact information.

PlanFacts was distributed to the attendees at the Core Planning Group Meeting on January 12, 2006 and the second Planning Group Meeting on March 9, 2006. It was also posted by several Planning Group Members on local notice boards throughout the county. The Fact Sheet can be found electronically on the Nassau County Office of Emergency Management Web site at:

<http://www.nassaucountyny.gov/agencies/OEM/hazmit/hazmitMtg.html> and was also distributed in hard copy at each of the nine document repositories. Below is a screen-capture of the document.



Document Repositories

Document repositories were assembled and made available for public viewing at nine locations throughout Nassau County as of fall 2005 to facilitate the understanding of the plan process and to inform the general public, local residents, business owners, non-profit organizations, community leaders and other stakeholders about the plan's goals and progress. The table below lists the locations where hardcopies of the repositories can be found:

Location	Address	Phone	Contact
Farmingdale Public library	116 Merritts Road Farmingdale, NY 11735	516-249-9090	Debbie Podolski
Glen Cove Public Library	4 Glen Cove Avenue Glen Cove, NY 11542-2885	516-676-2130	Maija Speraukas
Hicksville Public Library	169 Jerusalem Avenue Hicksville, NY 11801	516-979-1417	Elizabeth Goldfrank
Levittown Public Library	1 Bluegrass Lane Levittown, NY 11756-1292	516-731-5728	Celeste Watman
Long Beach Public Library	111 West Park Avenue Long Beach, NY 11561	516-432-7201	George Trepp
Long Beach Public Library	868 West Beech Street Long Beach, NY 11561	516-432-7201	George Trepp
Long Beach Public Library	26B Lido Boulevard Long Beach, NY 11561	516-432-7201	George Trepp
Mineola Memorial Library	195 Marcellus Road Mineola, NY 11501	516-746-8488	Charles Sleepe
Great Neck Public Library	159 Bayview Avenue Great Neck, NY 11023	516-466-8055	Arlene Nevans

The repositories contain all information that was distributed at meetings and is posted on the web site. They are updated periodically with hardcopies of new meeting minutes, PowerPoint slide presentations, agendas, copies of the Guidance Memorandums, invitations to area assessment meetings, faxes, letters, hazard identification questionnaires, handouts and other documents, as well as the Draft Plan.

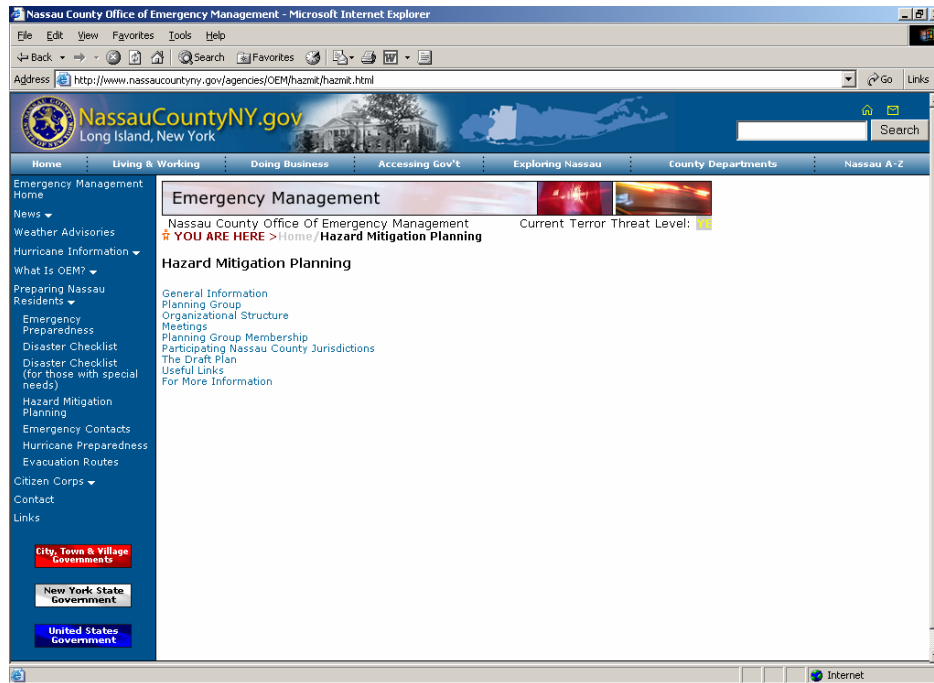
The meeting minutes contain a list of the attendees, by meeting and date, and provide an overview of the topics discussed during the meeting and action items that need to be realized by those attending the meeting or the participating jurisdictions, for example.

The handouts consist of such documents as the *Sources of Information on Hazard Mitigation Planning* which lists various Web sites that provide information on the Disaster Mitigation Act of 2000 (DMA 2000), the FEMA Interim Rules, FEMA's Multi-Hazard Mitigation Planning Guidance under DMA 2000 and FEMA's information on mitigation planning. Another handout is the *Nassau County Multi-Jurisdictional Natural Hazard Mitigation Planning Project PlanFacts* which summarizes the mitigation plan process and offers some insight as to what is hazard mitigation (discussed in further detail elsewhere in this report). Other handouts include the four Guidance Memorandums, the FEMA crosswalk, participation criteria, sample plan adopted resolution and Questionnaire #1 entitled, *Identification of Potential Hazards: What Hazards Can Affect You*.

Copies of all the information contained in the document repositories are also available in Adobe PDF format as soft copies accessible online at the Nassau County Office of Emergency Management Web site at: <http://www.nassaucountyny.gov/agencies/OEM/hazmit/hazmitMtg.html>.

Nassau County Multi-Jurisdictional Mitigation Planning Web Site

The Nassau County Web site contains a new section on the county-wide multi-jurisdictional hazard mitigation planning process (<http://www.nassaucountyny.gov/agencies/OEM/hazmit/hazmit.html>) which was initiated in January 2006 and will continue to be updated periodically. The additional WebPages were incorporated into the site for the purpose of informing the public (including businesses, local citizens and the residents that are part of the Nassau County communities) about the importance of hazard mitigation planning. In this section, the Office of Emergency Management provides information about the natural hazards that pose a risk to the County and its residents, and how to reduce the risk and the potential for future losses. Contact information for the NCOEM is also provided and individuals are invited to contact NCOEM for information on how to become involved or to provide comments. The image below is a screen-capture of the main mitigation planning Webpage on the County's site. Other jurisdictions have supplemented this by creating similar links on their jurisdiction web sites to the overall county mitigation planning pages, including Valley Stream, Mineola, and North Hempstead.



In addition to the new section on hazard mitigation planning, the OEM link to *Preparing Nassau Residents* also offers information on emergency preparedness, including an all-hazards emergency preparedness guide, a disaster checklist (including a checklist for those with special needs), a thorough emergency contact list, detailed hurricane preparedness information and hurricane evacuation routes. On the “Hazard Mitigation Planning” WebPage located under *Preparing Nassau Residents*, the following options are available:

- General Information
- Planning Group
- Organizational Structure
- Meetings
- Participating Nassau County Jurisdictions
- The Draft Plan
- Useful Links
- For More Information

The *General Information* section informs the reader about hazard mitigation and the hazard mitigation plan, and how Nassau County is involved in hazard mitigation. It also points out the by implementing the hazard mitigation plan over the long-term, the damages and loss of life, as a result of a natural disaster, may be diminished. The *Planning Group* section offers a list of all those participating jurisdictions, including local officials, the general public and other essential stakeholders in the plan. The *Organizational Structure* section contains a flowchart representation of the participating entities in the plan.

The *Meetings* section offers a listing of all the meetings held during 2005 and 2006 with the Planning Group, the Area Assessment Teams and other interested parties. The meeting agenda, minutes and other documents pertinent to each meeting can be found in this section for viewing or downloading. The *Participating Nassau County Jurisdictions* section contains a list of all those jurisdictions within Nassau

County who have expressed an interest in participating in the hazard mitigation plan. The *Draft Plan* section will contain the Draft Plan in Adobe PDF format (scheduled for public release in spring 2006). This section also contains a list of locations having hardcopies of the document repositories available to the general public for viewing (i.e., hardcopies of all documentation from the meetings held in 2005 and 2006, as well as a hardcopy of the Draft Plan).

Under *Useful Links*, the reader can find links to various FEMA WebPages with information on hazard mitigation, the guidelines, DMA 2000 and other related data. This section also contains a link to the New York State Emergency Management Office (SEMO). The *For More Information* section provides contact information for the Nassau County OEM regarding the Nassau County Multi-Jurisdictional Hazard Mitigation Plan.

Legal Notification

Obtaining support from the community and keeping them informed is fundamental to the overall success of the hazard mitigation plan. One of the ways in which the Planning Group encouraged public participation was by publishing legal notification in a widely-read local newspaper, Newsday. The notice presents the types of natural hazards that may affect Nassau County and how the County is planning to mitigate these hazards by involving community leaders and local residents in the planning process. It was published in Newsday's Nassau County, Suffolk County and New York City editions on February 2, 2006. The published legal notice provides a venue for the public to learn and understand the hazard mitigation process as well as, provides a means of allowing the public to express their concerns about the process and how it impacts their community. Other jurisdictions supplemented this with notices and press releases for their local papers, including North Hempstead and Malverne.

Involvement of Other Stakeholders in the Plan Development Process

In order to meet Federal requirements, the plan development process must be open to stakeholders beyond Planning Group members and the general public. That is, opportunities must be available for other stakeholders (such as businesses, neighboring communities, academia, other relevant private and non-profit interests, and other interested parties) to become involved in the planning process.

As with the general public, other stakeholders must be provided with some variety of means to not only learn about the process that the Planning Group is undertaking, but to voice concerns and to provide input throughout the planning process. With support and guidance from URS, each Town Team took the lead in pursuing a range of activities to: (a) alert other stakeholders to the fact that the Planning Group was working to develop this Hazard Mitigation Plan, and (b) provide other stakeholders with a forum to ask questions, and submit comments and/or suggestions on the process.

The Planning Group determined that outreach activities to the general public as summarized in the previous section would also reach and provide the same opportunities for other stakeholders such as businesses, neighboring communities, academia, other relevant private and non-profit interests, and other interested parties. In addition, targeted outreach to these groups included:

- The following other stakeholders were invited to and attended the Informational Session on the plan on June 14, 2004: NYSEMO, Long Island Contingency Planning Exchange, NYSDOS Codes Division, Nassau County Police Department, the National Weather Service, FEMA, Glen Cove Downtown Business Improvement District, NSLIJ Health System, Nassau County Fire

Commission, Nassau County Planning Federation, Nassau County Bridge Authority, NYSDOS Coastal Programs, USACE, LIPA, NYSDEC, WAWNC, and the Salvation Army.

- The following other stakeholders were invited to and attended one or more meetings since October of 2005: Albertson Park/NYCAD, Baldwin UFSD, ConEdison, Downtown Glen Cove Business Improvement District, Great Neck Schools, Hicksville Fire Department, Jericho Hamlet, LIPA/KeySpan, Locust Valley, Manhasset Chamber of Commerce, Massapequa Civic Association, Merrick Fire Department, Merrick Fire Department, Nassau Community College, Nassau County Superintendents of Buildings and Grounds Association, Nassau County Village Officials Association, Nassau Shores Civic Association, New York State DOT (Long Island), Oyster Bay Civic Association, Shoreville Park Civic Association, United States Post Office (Oyster Bay), WPFAD/Adelphi University and Seaford Schools.
- Nassau County OEM coordinated with its neighboring county to the east verbally via a telephone conversation with Suffolk County OEM in the fall of 2005. Suffolk OEM is in the early stages of mitigation plan development. The multi-jurisdictional hazard mitigation planning process was discussed and each welcomed participation from the other.

Review and Incorporation of Existing Plans, Studies, Reports, and Technical Information

In the process of preparing this hazard mitigation plan, many other existing plans, studies, reports, and technical information were evaluated. These sources are noted throughout this report as various topics are discussed. In summary, the development of this hazard mitigation plan included the review and incorporation as applicable of data from the following sources:

- Readily available on-line information from federal and state agency web sites including: FEMA, NYS Emergency Management Office, NYS Department of Environmental Conservation, US Forest Service National Avalanche Center, US Geological Survey, National Oceanic and Atmospheric Administration (including National Weather Service and National Climatic Data Center, and the National Severe Storms Laboratory), University of Buffalo Multidisciplinary Center for Earthquake Engineering Research (MCEER), USGS National Geomagnetism Program, USGS National Earthquake Information Center, NASA Space Environment Center, and the US Department of Transportation Federal Highway Authority.
- Nassau County's HAZNY analysis (January 2003)
- Nassau County Comprehensive Plan (1998 and 2003 update)
- New York State Hazard Mitigation Plan (Sept. 2004)
- New York State DEC Coastal Erosion Hazard Area maps (1988, Current as of Nov. 2005)
- FEMA Q3 Flood Data
- Nassau County GIS
- Town of Oyster Bay All Hazard Mitigation Plan (March 2005)
- USACE 1993 Hurricane Evacuation Study for New York State (and association SLOSH maps)
- HAZNY, Villages of Malverne (April 2002) and Valley Stream (2004)
- Draft Hazard Mitigation Plan, Village of Valley Stream (Oct. 2005)
- East Rockaway All Hazard Mitigation Plan (Aug. 2003)
- Manorhaven Emergency Response Plan (April 2003)
- USACE NYD Draft Feasibility Report for Long Beach Island (Sept. 1994)
- USACE NYD "North Shore of Long Island, New York, Storm Damage Protection and Beach Erosion Control Reconnaissance Study", Sept. 1995
- Governor's Coastal Erosion Task Force, Final Report, Volume 2, Long-Term Strategy, Sept. 1994
- USACE NYD "The Floods of August and September 1971 (Hurricane Doria)", March 1975.

- “Post Storm Evaluation of the March 29, 1984 Northeaster”, URS, March 1986.
- FEMA Flood Insurance Study for Nassau County, April 1997.
- USACE NYD “Report on Storm of 6-8 March 1962”, Volume I, February 1963.
- USACE NYD “Atlantic Coast of New York Jones Inlet to East Rockaway Inlet Long Beach Island, New York, Storm Damage Reduction Project – Fact Sheet”
- USACE NYD “Long Beach Island, New York, Hurricane and Storm Damage Reduction Limited Reevaluation Report, Draft”, February 2006.
- LI Regional Planning Board’s “Hurricane Damage Mitigation Plan for the South Shore, Nassau and Suffolk Counties, NY” (1984)
- Federal Register, January 16, 2002, regarding recent historic coastal events and associated wave action on the North Shore.
- “Do Earthquakes Occur in New York State” by Isachson, Y.W., E. Landing, J. M. Lauber, et al., eds. (posted on the MCEER web site)
- FEMA Mitigation Planning “How-To” Guides
- “Have there been earthquakes in Western New York?” by Jerold C. Bastedo (posted on the MCEER web site)
- “Earthquake Data for New York State” by Carl W. Stover and Jerry Coffman (posted on the MCEER web site)
- NYSEMO’s “Emergency Management Times” (Summer 2002 issue)
- HAZUS-MH GIS shape files for emergency facilities, utilities, and population
- NYS Historic Preservation Office GIS shape files for state and federally listed historic and cultural resources
- FEMA data for NFIP Repetitive Loss Properties and Community Rating System communities
- FEMA’s “NFIP Floodplain Management Requirements: a Study Guide and Desk Reference for Local Officials (FEMA-480)”
- USGS Landslide Overview Map of the Conterminous United States, prepared in hard copy format in 1982 by Dorothy H. Radbruch-Hall, Roger B. Colton, William E. Davies, Ivo Lucchitta, Betty A. Skipp, and David J. Varnes (Geologic Survey Professional Paper 1183), compiled digitally by Jonathan W. Godt (USGS Open File Report 97-289), as viewed on NationalAtlas.gov
- FEMA’s “Multi-Hazard Identification and Risk Assessment” (1997)
- USGS Hydrologic Atlas 730-M for Segment 12, published by Perry G. Olcott, 1995.
- American Society of Civil Engineers “Wind Zones in the United States” map
- NOAA’s Atlantic Oceanographic and Meteorological Laboratory’s mapping – “Empirical Probability of a Named Storm”
- American Meteorological Society “Glossary of Meteorology”
- In addition, to conduct their Capability Assessments, local jurisdictions considered relevant plans, codes, and ordinances currently in place such as building codes, zoning ordinances, subdivision ordinances, special purpose ordinances, site plan review requirements, growth management ordinances, comprehensive plans, capital improvements plans, economic development plans, emergency response plans, post-disaster recovery plans, post-disaster recovery ordinances, and real estate disclosure ordinances. For additional information, please see the “Capabilities and Resources” section of this plan.

Regulatory Compliance

This Hazard Mitigation Plan was prepared in a manner consistent with applicable regulations, criteria, and guidance. The Plan’s components address the local hazard mitigation planning requirements of the DMA 2000.

The Planning Group used FEMA's Multi-Hazard Mitigation Planning Guidance document of March 2004 as a guide. This document contains what is known as a Crosswalk Reference Document for FEMA reviewers to track where in a document various criteria are addressed. Each criteria must be addressed satisfactorily for a plan to be approved by FEMA. There are three exceptions, with regard to assessing vulnerability. They are:

- Assessing Vulnerability: Identifying Structures: §201.6(c)(2)(ii)(A)
- Assessing Vulnerability: Estimating Potential Losses: §201.6(c)(2)(ii)(B)
- Assessing Vulnerability: Analyzing Development Trends: §201.6(c)(2)(ii)(C)

For these three criteria, highlighted in gray in Table 4, actions are strongly encouraged by FEMA, though not required by the DMA 2000 Interim Final Rule. While FEMA encourages communities to address such criteria, they are not required for Plan approval. For the Nassau County Multi-Jurisdictional Hazard Mitigation Plan, these three criteria were addressed to the greatest extent practicable in the time available and using the best readily-available data.

The following table summarizes specific requirements in the Interim Final Rule, and whether the regulation implementing DMA 2000 is addressed in this plan. Information in this plan is presented in the order of the plan review criteria for NYSEMO/FEMA reviewer's ease in evaluating compliance.

Table 5	
FEMA Plan Review Criteria	
FEMA Plan Review Criteria	Addressed in this Plan
Prerequisites	
Adoption by the Local Governing Body: §201.6(c)(5)	Yes
Multi-Jurisdictional Plan Adoption: §201.6(c)(5)	Yes
Multi-Jurisdictional Planning Participation: §201.6(a)(3)	Yes
Planning Process	
Documentation of the Planning Process: §201.6(b) and §201.6(c)(1)	Yes
Risk Assessment	
Identifying Hazards: §201.6(c)(2)(i)	Yes
Profiling Hazards: §201.6(c)(2)(i)	Yes
Assessing Vulnerability: Overview: §201.6(c)(2)(ii)	Yes
Assessing Vulnerability: Identifying Structures: §201.6(c)(2)(ii)(A)	Yes
Assessing Vulnerability: Estimating Potential Losses: §201.6(c)(2)(ii)(B)	Yes
Assessing Vulnerability: Analyzing Development Trends: §201.6(c)(2)(ii)(C)	Yes
Multi-Jurisdictional Risk Assessment: §201.6(c)(2)(iii)	Yes
Mitigation Strategy	
Local Hazard Mitigation Goals: §201.6(c)(3)(i)	Yes
Identification and Analysis of Mitigation Actions: §201.6(c)(3)(ii)	Yes
Implementation of Mitigation Actions: §201.6(c)(3)(iii)	Yes
Multi-Jurisdictional Mitigation Actions: §201.6(c)(3)(iv)	Yes
Plan Maintenance Process	
Monitoring, Evaluating, and Updating the Plan: §201.6(c)(4)(i)	Yes
Incorporation into Existing Planning Mechanisms: §201.6(c)(4)(ii)	Yes
Continued Public Involvement: §201.6(c)(4)(iii)	Yes

Document Organization

This Multi-Jurisdictional Hazard Mitigation Plan for Nassau County is organized into the following major sections.

Introduction: Plan purpose, overview of Nassau County, summary of plan development process, document organization, and key terms.

Identification of Potential Hazards: Documentation of the Planning Group's evaluation of a full range of natural hazards, and indication of which hazards were identified for inclusion in this plan (and why) versus those that were not identified (and why not).

Risk Assessment: Hazard profiles, identification and characterization of assets in hazard areas, damage estimates, and summary of land uses and development trends in hazard areas.

Capabilities and Resources: Overview of local, state, and federal resources for hazard mitigation.

Mitigation Goals. Summary of hazard mitigation goals for the State Hazard Mitigation Plan and also for this county-wide multi-jurisdictional hazard mitigation plan.

Range of Alternative Mitigation Actions Considered. Summary of mitigation actions considered by participating jurisdictions.

Action Item Evaluation and Prioritization. Information regarding the methodology and process followed by participating jurisdictions to evaluate and prioritize unique hazard mitigation actions for their communities.

Implementation Strategy. Summary of hazard mitigation actions selected by each participating jurisdiction.

Plan Maintenance. Procedures selected for monitoring, evaluating, and updating this mitigation plan; including participation of the public and other stakeholders in plan maintenance, and plan integration.

Key Terms

For the purpose of clarity throughout this document, the following definitions are briefly outlined:

- **Hazard mitigation** is the method by which measures are taken to reduce, eliminate, avoid or redirect natural hazards in order to diminish or eradicate the long-term risks to human life and property.
- A **natural hazard** is any hazard that occurs or results from acts of nature such as floods, earthquakes, hurricanes, tornadoes and coastal storms, to name a few.
- A **hazard mitigation plan** is a well-organized and well-documented evaluation of the natural hazards and the extent that the events will occur. In addition, the plan identifies the vulnerability to the effects of the natural hazards typically present in a certain area, as well as the goals,

objectives and actions required for minimizing future loss of life and property damage as a result of natural hazards.

- **Hazard mitigation planning** is the process of managing actions taken by individual citizens and professional organizations involved in mitigation activities. The process involves carrying out plans to reduce loss of life, injuries and damage to property, as well as reducing the costs associated with losses from natural hazards. It is a long-term process with benefits best realized over time.
- A **disaster** is any catastrophic event that causes loss of life, injuries and widespread destruction to property. For the purpose of this document, a disaster is the result of a natural hazard, whether anticipated (such as flash flood warnings) or fortuitous (such as earthquakes).
- The term **human-caused hazards** refers to technological hazards + terrorism, where “technological hazards” are incidents that arise from human activities such as the manufacture, transportation, storage, and use of hazardous materials, where the incidents are accidental and their consequences unintended; and “terrorism” is the intentional, criminal, and/or malicious acts resulting from the use of Weapons of Mass Destruction (WMD), including biological, chemical, nuclear, and radiological weapons; arson, incendiary, explosive and armed attacks; industrial sabotage and intentional hazardous materials releases; and cyberterrorism.

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IDENTIFICATION OF POTENTIAL HAZARDS

FEMA's current regulations and interim guidance require, at a minimum, an evaluation of a full range of natural hazards. An evaluation of "human-caused" hazards (i.e., technological hazards and/or terrorism) is encouraged, though not required, for plan approval under DMA 2000. Nassau County has focused solely on natural hazards at this time. Incorporation of human-caused hazards can be evaluated in future versions of the plan, as it is a "living document" which will be monitored, evaluated and updated regularly.

After consideration of a full range of natural hazards, Nassau County has identified several hazards that are addressed in this Multi-Jurisdictional Hazard Mitigation Plan. These hazards were identified through an extensive process that utilized input from Planning Group members, research of past disaster declarations in the County, review of Nassau County's January 2003 Hazards New York (HAZNY) analysis, and review of the New York State Hazard Mitigation Plan (2005). Readily available online information from reputable sources (such as federal and state agencies) was also evaluated to supplement information from these key sources.

The following table documents this evaluation process for the full range of hazards considered. For each hazard considered it indicates whether or not the hazard was identified as a significant hazard to be addressed in the plan, how this determination was made, and why this determination was made. The table works to summarize not only those hazards that *were* identified (and why) but also those that *were not* identified (and why not). Because this Hazard Mitigation Plan is a living document, hazard events not identified for inclusion at this time could be addressed during future evaluations and updates of the plan if deemed necessary by the Planning Group at that time.

IDENTIFICATION OF POTENTIAL HAZARDS

Table 6 Summary of Hazard Investigation			
Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan? (Yes or No)	How was this determination made?	Why was this determination made?
Avalanches	No	<ul style="list-style-type: none"> • Review of US Forest Service National Avalanche Center Web site • Review of State Plan • Input from Planning Group 	<ul style="list-style-type: none"> • While avalanches are possible in some parts of northern New York State, the topography and climate in Nassau County would not support conditions needed for an avalanche to occur.
Coastal Erosion Wave Action	Yes	<ul style="list-style-type: none"> • Review of State Plan • Review of Nassau Co. HAZNY • Input from Planning Group 	<ul style="list-style-type: none"> • Nassau County's north and south shores are bounded by coastal waters. • Coastal erosion hazard history, particularly on south shore barrier islands. • Wave action was ranked as a moderately high hazard by the HAZNY team, and the team noted that wave action is a major concern for the County. • The HAZNY team noted that wave action occurs regularly.
Earthquakes	Yes	<ul style="list-style-type: none"> • Review of SEMO Web site, USGS data, & ESRI Web site • Review of State Plan • Review of Nassau Co. HAZNY • Input from Planning Group 	<ul style="list-style-type: none"> • Earthquakes have occurred in and around the State of New York in the past, affecting Nassau County. • The HAZNY team noted that earthquakes occur rarely, but could cause moderate damage to private property and moderate structural damage to public facilities. • The State Plan notes that Nassau county falls within one of three areas in New York State with a relatively high seismic risk. It also notes that the soil classifications of much of Nassau County would tend to experience an amplification of ground motion and resulting higher risk to a given earthquake magnitude. • According to the USGS online seismic hazard maps, the peak ground acceleration with a 10% probability of exceedance over 50 years for Nassau County is between 4 and 5%g. FEMA's How-To Guide recommends that earthquakes be considered for further evaluation in the planning process in areas where the peak ground accelerations with a 10% probability of exceedance over 50 years is greater than 2%g.

IDENTIFICATION OF POTENTIAL HAZARDS

Table 6
Summary of Hazard Investigation

Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan? (Yes or No)	How was this determination made?	Why was this determination made?
Expansive Soils	No	<ul style="list-style-type: none"> • Review of US Department of Transportation Federal Highway Authority Web site • Input from Planning Group • Expansive soils are not in the State Plan or Nassau Co. HAZNY. 	<ul style="list-style-type: none"> • Nassau County is located in a part of the country identified as generally nonexpansive (the occurrence of expansive materials is extremely limited), according to USDOT FHA Report No. FHWA-RD-76-82. • No known historic occurrences.
Floods	Yes	<ul style="list-style-type: none"> • Review of FEMA, ESRI, and NOAA NCDC Web sites • Review of State Plan • Review of Nassau Co. HAZNY • Input from Planning Group 	<ul style="list-style-type: none"> • Nassau County's north and south shores are bounded by coastal waters. There are also several inland water bodies. • A query of the NOAA NCDC Web site notes 48 flood events in Nassau County between 01/01/1950 and 06/30/2005, resulting in \$12.25 Million in property damage. • Significant number of historical flood events. According to the NYS Plan, Nassau County has one of the highest number of flood disaster declarations in the state and is third in the number of NFIP Repetitive Loss Properties. • The results of the State's flood hazard vulnerability assessment place Nassau County as the most threatened to flooding and vulnerable to flood losses. Nassau County is also ranked first in terms of estimated value of residential structures in the 100year floodplain. • Floods were ranked as a moderately high hazard by the HAZNY team. • The HAZNY team noted that floods occur frequently.
Geomagnetism	No	<ul style="list-style-type: none"> • Geomagnetism is not in the State Plan or HAZNY • Review of USGS National Geomagnetism Program Web site & NASA Space Environment Center Web site • Input from the Planning Group 	<ul style="list-style-type: none"> • Geomagnetic storms can cause power outages and/or power grid fluctuations, and disruptions to HF radio propagation and low frequency radio navigation (radio blackouts). • Various federal government agencies, utility companies, etc. already have plans in place to initiate response actions for minimizing affects. • No known historic impacts in Nassau County.

IDENTIFICATION OF POTENTIAL HAZARDS

Table 6
Summary of Hazard Investigation

Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan? (Yes or No)	How was this determination made?	Why was this determination made?
Ice Jams	No	<ul style="list-style-type: none"> • Ice jams are not in the HAZNY • Review of the State Plan • Review of NOAA NCDC Web site • Input from the Planning Group 	<ul style="list-style-type: none"> • Ice jams typically occur when runoff from a melting heavy snow pack enters an ice-clogged waterway. Their effects are exacerbated by steep slopes. They are most common where climate includes extended periods of below freezing temperatures. • Nassau County's climate and topography do not support ice jam formation. • No known historic occurrences, as per USACE CRELL Ice Jam database and NYSEMO Archives (as reported in State Plan).
Land Failure:	Yes	<ul style="list-style-type: none"> • See event-specific information below 	See event-specific information below
<i>Land Failure: Landslides</i>	Yes	<ul style="list-style-type: none"> • Landslides are not in the HAZNY • Review of State Plan • Input from Planning Group 	<ul style="list-style-type: none"> • Generally low susceptibility and incidence on the southern 2/3 of Nassau County, but high susceptibility and low incidence on the northern 1/3 of the county. • State Plan indicates 11 historic landslides in northern Nassau County (as per NYSGS Landslide Inventory). • The State Plan ranks Nassau County third highest in the state of counties most threatened by landslides and vulnerable to landslide losses.
<i>Land Failure: Land Subsidence</i>	No	<ul style="list-style-type: none"> • Land subsidence is not in the HAZNY • Review of State Plan • Input from Planning Group 	<ul style="list-style-type: none"> • The State Plan notes a certain amount of land subsidence hazard in New York State, but also a very low risk to population and property. The land subsidence hazard is noted as extremely localized and virtually unpredictable. The plan does not identify any past occurrences of land subsidence in Nassau County and states that, as a general rule, land subsidence occurrence can be expected where it has occurred in the past, in areas of underground mines, and in areas of karst topography, none of which are identified in the Plan in relation to Nassau County.

IDENTIFICATION OF POTENTIAL HAZARDS

Table 6
Summary of Hazard Investigation

Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan? (Yes or No)	How was this determination made?	Why was this determination made?
Severe Weather: Including Events Such As Drought, Extreme Temperatures, Hailstorms, Hurricanes, Tornadoes, & Winter Storms/Ice Storms	Yes	<ul style="list-style-type: none"> • See event-specific information below 	<ul style="list-style-type: none"> • Severe storms in general were ranked as moderately high hazards by the HAZNY team. • The HAZNY team noted that severe storms occur frequently. • See event-specific information below
Severe Weather: Drought	Yes	<ul style="list-style-type: none"> • Review of NYSDEC Web site • Review of State Plan • Review of Nassau Co. HAZNY • Input from Planning Group 	<ul style="list-style-type: none"> • Droughts have occurred in Nassau County in the past, with drought watches and warnings being issued by the NYSDEC in the past. • Droughts were ranked as a moderately low hazard by the HAZNY team. • The HAZNY team noted that drought events occur regularly.
Severe Weather: Extreme Temperatures	No	<ul style="list-style-type: none"> • Review of Nassau Co. HAZNY • Extreme Temperatures are not an identified hazard in the State Plan • Review of data on the NOAA National Climatic Data Center Web site • Input from Planning Group 	<ul style="list-style-type: none"> • Extreme temperatures were ranked as a moderately low hazard by the HAZNY team, who noted that serious injury or death is likely but not in large numbers; little or no damage to private property; and little or no structural damage to public facilities. • According to the NOAA NCDC, only 9 extreme temperature events have occurred between 01/01/1950 and 06/30/2005. • Extreme temperature events have occurred in Nassau County's past, and will continue to occur in the future. "Damages" associated with extreme temperatures are primarily realized in terms of health impacts, an increased need for cooling center operation, and increased demand on the local power supply. Government and industry standard operating plans, emergency response plans, and/or emergency operations plans, are appropriate vehicles for providing opportunities for improved response to – and preparation for – extreme temperature conditions.

IDENTIFICATION OF POTENTIAL HAZARDS

Table 6
Summary of Hazard Investigation

Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan? (Yes or No)	How was this determination made?	Why was this determination made?
<i>Severe Weather: Hailstorms</i>	No	<ul style="list-style-type: none"> Hailstorms are not an identified hazard in the State Plan or HAZNY Review of data on the NOAA National Severe Storms Laboratory Web site and the NOAA National Climatic Data Center Web site Input from Planning Group 	<ul style="list-style-type: none"> According to the NOAA NCDC, 26 hail events were reported between 01/01/50 and 06/30/05, or an average of 1 event every 2.12 years., with a total of zero deaths/injuries and zero dollars in damage to property/crops. According to the NOAA NSSL Web site, Nassau County lies in a party of the country for which the likelihood of damaging hail of at least 2 inches in diameter is less than 0.25 days per year.
<i>Severe Weather: Hurricanes</i>	Yes	<ul style="list-style-type: none"> Review of State Plan Review of Nassau Co. HAZNY Input from Planning Group 	<ul style="list-style-type: none"> Hurricanes were ranked as a moderately high hazard by the HAZNY team. The HAZNY team noted that hurricanes occur regularly. Hurricanes were the highest ranked natural hazard in Nassau County by the State Plan.
<i>Severe Weather: Tornadoes</i>	Yes	<ul style="list-style-type: none"> Review of State Plan Review of Nassau Co. HAZNY Review of NOAA NCDC Web site Input from Planning Group 	<ul style="list-style-type: none"> Tornadoes were ranked as a moderately high hazard by the HAZNY team. The HAZNY team noted that tornadoes occur regularly. In the NYS Plan, Nassau County is ranked as the second most threatened county in the state to extreme winds and second most vulnerable to extreme wind losses. According to the NOAA NCDC Web site, 6 tornadoes and 88 high wind events were reported between 01/01/50 and 02/28/05 causing a total of 20 injuries, 38 deaths, and roughly \$3.75M in property damage.
<i>Severe Weather: Winter Storms/Ice Storms</i>	Yes	<ul style="list-style-type: none"> Review of State Plan Review of Nassau Co. HAZNY Review of NOAA NCDC Web site Input from Planning Group 	<ul style="list-style-type: none"> Ice storms and severe winter storms were ranked as moderately low hazards by the HAZNY team. The HAZNY team noted that winter storms occur frequently and ice storms occur regularly. The State Plan notes that while Nassau County has a relatively low amount of average annual snowfall, it has been included in two past snow-related disaster declarations and is vulnerable to the effects of nor'easters.

IDENTIFICATION OF POTENTIAL HAZARDS

Table 6 Summary of Hazard Investigation			
Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan? (Yes or No)	How was this determination made?	Why was this determination made?
Tsunamis	No	<ul style="list-style-type: none"> • Tsunamis are not in the State Plan • Review of the Nassau Co. HAZNY • Readily available online information, primarily NOAA • Input from Planning Group 	<ul style="list-style-type: none"> • There are conflicting schools of thought in terms of the risk of tsunamis on the US East Coast. Some researchers believe that east coast tsunamis are imminent. However, it is more frequently accepted by the scientific community that tsunamis, though not impossible, are highly unlikely in the Atlantic Basin. • This hazard could be reexamined during future evaluations/updates of the Plan if additional information becomes available.
Volcanoes	No	<ul style="list-style-type: none"> • Volcanoes are not in the State Plan or Nassau Co. HAZNY • Review of USGS Web site • Input from Planning Group 	<ul style="list-style-type: none"> • Volcanoes are not located in, or remotely near, the part of the country in which Nassau County is located.
Wildfires	No	<ul style="list-style-type: none"> • Review of the Nassau Co. HAZNY • Review of the State Plan • Review of data on the NCDC Web site (National Climatic Data Center) • Input from Planning Group 	<ul style="list-style-type: none"> • Wildfires were the lowest ranked natural hazard evaluated by the HAZNY team. • The HAZNY team noted that serious injury or death from wildfires is unlikely; that little or no damage to private property is expected; and that little or no structural damage to public facilities would be expected. • No past wildfires in Nassau County are recorded in the State Plan. • A query of the NCDC database resulted in no recorded wildfires in Nassau County (between 01/01/1950 and 06/30/2005).
Extreme Winds	Yes	<ul style="list-style-type: none"> • Review of State Plan • Review of Nassau Co. HAZNY • Review of NOAA NCDC Web site • Input from Planning Group 	<ul style="list-style-type: none"> • In the NYS Plan, Nassau County is ranked as the second most threatened county in the state to extreme winds and second most vulnerable to extreme wind losses. • According to the NOAA NCDC Web site, 6 tornadoes and 88 high wind events were reported between 01/01/50 and 02/28/05 causing a total of 20 injuries, 38 deaths, and roughly \$3.75M in property damage.